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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: NGUYEN et al.

Examiner: Phan, Thai Q.

Application No.: 09/872,401

Group Art Unit: 2123

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For: Methods And Systems For Electronics
Assembly System Consultation And Sales

Commissioner for Patents
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APPEAL BRIEF

Commissioner of Patents
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Sir:

This is an appeal from the final rejection of claims 1-3, 5-7, 9-12, 14-20 and 22-24 of the above-identified application.

This Appeal Brief is submitted in triplicate as required by 37 C.F.R. § 1.192 (a).

1. Real Party in Interest:

This application is assigned to Siemens Dematic Electronic Assembly Systems Inc., which is now known as and merged into Siemens Energy & Automation, Inc., the real party of interest.

2. Related Appeals and Interferences:

There are no other appeals or interferences known to Appellant that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

3. Status of Claims:

Claims 1-3, 5-7, 9-12, 14-20 and 22-24 are pending in this application and stand rejected by the Examiner.

4. Status of any Amendment Filed Subsequent to Final Rejection:

No Amendment was filed in response to the final rejection. A Response to the final rejection was filed on July 28, 2005 and a Supplemental Response was filed October 24, 2005.

5. Summary of Invention

The invention of claim 1 is a method for providing consulting services to a customer in connection with the customer's electronics assembly system, comprising the steps of:

a. identifying a set of solutions opportunities for the customer's electronics assembly system (page 113, lines 27-30; Fig. 30, step 3002);

b. modeling, on a computer, the customer's electronics assembly system in real time with the customer present (page 113, line 32 to page 114, line 5; Fig. 30, step 3004);

c. defining one or more performance metrics for a proposed solution (page 114, lines 5-8; Fig. 30, step 3006);

d. prioritizing the identified solutions by running the model for each of the identified solutions (page 114, lines 9-12; Fig. 30, step 3008);

e. selecting a proposed solution from among the prioritized, identified solutions (page 114, lines 12-14; Fig. 30, step 3010);

f. quantifying the benefit of the proposed solution relative to the one or more performance metrics (page 114, lines 14-16; Fig. 30, step 3012); and

g. communicating the quantified benefit to the customer (page 114, lines 16-17; Fig. 30, step 3014)

wherein the quantified benefit comprises a cost of ownership measure (page 114, lines 14-24), and

wherein the customer's electronics assembly system is modeled within approximately one half hour (page 4, lines 9-13 and page 9, lines 1-4).

The invention of claim 2 is a method wherein the model represents the electronics assembly system at a material flow level of abstraction (page 101, lines 5-13).

The invention of claim 3 is a method wherein the model comprises a simulation (page 101, lines14-22).

The invention of claim 5 is a method wherein the proposed solution comprises information relating to a machine in the electronics assembly system (page 101, lines 14-22).

The invention of claim 6 is a method wherein the proposed solution comprises information relating to a software tool in the electronics assembly equipment (page 105, lines 13-22).

The invention of claim 7 is a method wherein the proposed solution comprises information relating to an operating parameter of a machine in the electronics assembly system (page 105, lines 13-22).

The invention of claim 9 is a method comprising the steps of:

modifying the configuration of a modeled electronics assembly system proposed solution to reflect information provided by the customer (page 114, lines 19-24; Fig. 31, step 3114);

quantifying the benefit of the modified proposed solution relative to the one or more performance metrics (page 114, lines 24-27; Fig. 31, step 3116); and

communicating the quantified benefit of the modified proposed solution to the customer (page 114, lines 16-17; Fig. 31, step 3118).

The invention of claim 10 is a method for developing an electronics assembly equipment sales offer to a customer during a particular sales session, the method comprising the steps of:

a. identifying a set of customer requirements and constraints (page 115, lines 3-7; Fig. 32, step 3202);

b. selecting an electronics assembly configuration, comprising electronics assembly equipment or its operating parameters or both, for accomplishing the customer requirements (page 115, lines 7-8; Fig. 32, step 3204);

c. establishing a model of an assembly system comprising the selected configuration (page 115, lines 8-10; Fig. 32, step 3206);

d. running the model on a computer to generate at least one performance measure (page 115, lines 10-12; Fig. 32, step 3208);

e. comparing the at least one performance measure against the customer constraints (page 115, lines 12-13; Fig. 32, step 3210); and

f. if the at least one performance measure satisfies the customer constraints, offering to sell at least a subset of the electronics assembly equipment of the configuration to the customer (page 115, lines 13-21; Fig. 32, steps 3212, 3214),

wherein the offer is developed, with the benefit of the model, during the sales session (page 113, lines 23-28), and

wherein the customer's electronics assembly system comprising the selected configuration is modeled within approximately one half hour (page 4, lines 9-13, page 9, lines 1-5).

The invention of claim 11 is a method wherein the model represents the electronics assembly system at a material flow level of abstraction (page 101, lines 5-13).

The invention of claim 12 is a method wherein the model comprises a simulation (page 101, lines14-22).

The invention of claim 14 is a method wherein the proposed configuration comprises information relating to a machine in the electronics assembly system (page 101, lines 14-22).

The invention of claim 15 is a method wherein the proposed solution comprises information relating to a software tool in the electronics assembly equipment (page 105, lines 13-22).

The invention of claim 16 is a method wherein the proposed configuration comprises information relating to an operating parameter of a machine in the electronics assembly system (page 105, lines 13-22).

The invention of claim 17 is a method wherein the performance measure relates to a cost of ownership measure (page 114, lines 14-24).

The invention of claim 18 is a method for optimizing the performance of an electronics assembly system during a customer session, comprising the steps of:

a. establishing, during the session, a model of an assembly system having a plurality of possible configurations (page 15, lines 22-25; Fig. 33, step 3302);

b. selecting a measure of performance for the assembly system (page 115, lines 25-28; Fig. 33, step 3304);

c. selecting for evaluation a subset of the plurality of configurations (page 114, lines 26-28; Fig. 33, step 3306);

d. selecting a criterion for the comparison of the subset of the plurality of configurations and selection of a preferred configuration (page 115, lines 29-30; Fig. 33, step 3308);

e. running the model on a computer to predict the measure of performance for the system, for each of the subset of the plurality of configurations (page 116, lines 1-3; Fig. 33, step 3310);

f. applying the criterion to the results obtained in step e to select a preferred configuration of the assembly system (page 116, lines 3-4; Fig. 33, step 3312), and

g. quantifying a benefit of the preferred configuration, wherein the quantified benefit comprises a cost of ownership measure (page 114, lines 14-24), and

wherein the customer's electronics assembly system is modeled within approximately one half hour (page 4, lines 9-13, page 9, lines 1-5).

The invention of claim 19 is a method wherein the model represents the electronics assembly system at a material flow level of abstraction (page 101, lines 5-13).

The invention of claim 20 is a method wherein the model comprises a simulation (page 101, lines14-22).

The invention of claim 22 is a method wherein the preferred configuration includes information relating to a machine in the electronics assembly system (page 101, lines 14-22).

The invention of claim 23 is a method wherein the preferred configuration includes information relating to a software tool in the electronics assembly equipment (page 105, lines 13-22).

The invention of claim 24 is a method wherein the preferred configuration includes information relating to an operating parameter of a machine in the electronics assembly system (page 105, lines 13-22).

6. Issue

Whether claims 1-3, 5-7, 9, 18-20 and 22-24 are patentable under 35 U.S.C. 103(a) as not being obvious from Worhach et al. (IEEE 1997) in view of Elliott (US 5,907,489) and whether claims 10-12 and 14-17 are patentable under 35 U.S.C. 103(a) as not being obvious from Worhach et al. in view of Elliott and further in view of Puri (US 5,907,489).

7. Grouping of Claims:

With regard to the obviousness rejections claims 1-3, 5-78 and 9 stand or fall together; claims 10-12, and 14-17 stand or fall together; and claims 18-20 and 22-24 stand or fall together.

8. Arguments

Claims 1-3, 5-7, 9, 18-20 and 22-24 are patentable under 35 U.S.C. 103(a) as not being obvious from Worhach et al. in view of Elliott and claims 10-12 and 14-17 are patentable under 35 U.S.C. 103(a) as not being obvious from Worhach et al. in view of Elliott and further in view of Puri

In the final Office Action, the Examiner rejected claims 1-3, 5-7, 9, 18-20 and 22-24 under 35 U.S.C. 103(a) as being obvious from Worhach et al. in view of Elliott. The claimed invention is not taught or suggested by Worhach et al. and Elliott for the following reasons.

With regard to the subject matter of the claimed invention, consultants typically spend a great deal of time, sometimes several weeks, building a discrete event simulation model. A simulation requiring such a protracted set up process is of little value to a salesperson pitching equipment, or to a consultant trying to demonstrate ways of increasing an assembly system's efficiency during the course of a customer visit. The claimed invention makes it possible for a consultant or a salesperson, attempting to sell products or services, to deliver a persuasive, well-supported sales pitch, or consultation in far less time based on modeling of a system.

Each independent claim 1 and 18 recites that the modeling occurs within approximately one half hour. As noted at page 4 of the specification, with the modeling of the invention, it is possible for an electronics assembly equipment salesperson or consultant to generate a simulation model for purposes of a sales pitch or a consulting project within approximately half and hour, or even less, to conduct model-based prediction of system performance under various configuration assumptions, and finally, to generate for an actual or prospective customer one or more expected cost of ownership values for particular configuration assumptions. In other words, the consultant or salesperson can generate and evaluate configuration options for a customer in "real time" or "on the fly", during the course of a session with the customer.

The Examiner admits that Worhach et al. do not appear to explicitly teach that modeling occurs within approximately one half hour. The Examiner cites Elliott as teaching an automated fixture builder system that reduces time to build a fixture down to about 15-30 minutes and contends that it would have been obvious to "perform the method of Worhach et al. to model an electronics assembly system within one half hour, because performing the modelling (sic) in a fast manner would permit faster turnaround in the consulting process ...".

Applicants first note that Worhach et al. does not teach or suggest that their modeling is for a "consulting process". Worhach et al. is not concerned with providing consulting services to a customer as claimed, but as mentioned in the Abstract, Worhach et al. relates to a case study to illustrate the influencing factors in design and layout for a workstation motherboard.

The Applicants previous argued that Elliott provides no disclosure or suggestion of modeling an electronics assembly system within approximately a one half hour time frame as claimed, but merely states the time to build a fixture is reduced, and as such is non-analogous art. In re Wood, 202 USPQ 171, 174 (CCPA 1979). As noted by the MPEP § 2141.01 (a), page 2100-122, the differences in structure and function of the inventions carry great weight in determining that a reference is not analogous art.

In response, the Examiner stated that "a common (if not universal) motivation found in the (modeling and manufacturing, sales) arts is the desire to decrease the time from start-to-finish, including model-to-product and product-to-sale."

The Examiner further stated that,

> Additionally, it should be noted that the modeling system of Worhach et al. is shown as implemented using web pages... It is highly unlikely that a user running the process models from the Internet would desire to spend more than a few minutes waiting for the results. The nature of the problem solved (presenting manufacturing models to a user via the Internet) would encompass the motivation to speed up the process so as to not waste the user's time or attention.

First, Worhach et al. does not disclose the use of the Internet in order to speed up the process. In fact, Worhach et al. disclose that since electronic system design and manufacturing is highly dispersed throughout a firm, the Internet is a way to implement design models in a distributed manner. The Internet is merely a way for engineers to input data regarding a process at their particular location.

Secondly, Worhach et al. teaches away from a speedy process and discloses at IV. CASE STUDY that "Model outputs are computed for a total weekly production run of 13,500 boards." It is not evident that such computations can be performed within approximately one half hour. Furthermore, in Worhach et al, it took several months of production over different processes and board types to validate the models and model parameters (see the paragraph under TABLE VII of Worhach et al.). Certainly, time was not an issue in Worhach et al. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. MPEP §2141.02, page 2100-127 (Rev. 2, May 2004) (citing W.L. Gore & Assoc. v. Garlock, Inc., 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984)).

Applicants submit that just because Elliott teaches that a fixture can be built in 15-30 minutes, does not suggest that the Worhach et al. electronics assembly can be

modeled in such a time frame. In fact, Worhach et al. suggest a significantly greater time frame for his modeling. What the Examiner has inappropriately done is to find a statement in a patent (Elliott) that a procedure can be performed in 15-30 minutes and to take that statement, which is applicable only to the invention of Elliott, and establish obviousness in a completely different environment.

In addition, each of claims 1 and 18 as amended recites that the quantified benefit comprises a cost of ownership measure. The Examiner contends that Worhach et al. "calculates a cost of ownership measure corresponding to energy and waste consumption. See "IV. Case Study" at pages 222-224". The modeling of Worhach et al. do not teach or suggest quantifying any benefit relating to cost of ownership. Worhach et al. merely compare aqueous and no clean process alternatives of a circuit board with regard to energy and waste generation. Energy and waste generation may be quantified in Worhach et al. but these parameters are not quantified with regard to any cost of ownership as claimed.

The Examiner rejected claims 10-12 and 14-17 under 35 U.S.C. 103(a) as being obvious from Worhach et al. in view of Elliott and further in view of Puri. Claim 10 recites that the modeling occurs within approximately one half hour and the Examiner rejection is improper for the reasons advanced above with respect to claims 1 and 18. Those reasons need not be repeated here.

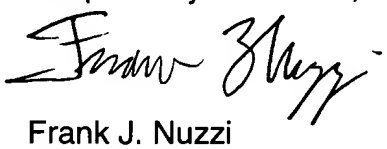
In addition, with regard to claim 10, Worhach et al. do not teach or suggest a sales offer of at least a subset of an electronics assembly equipment to a customer, but relates to predicting and evaluating environmental characteristics of a production system. The result of the modeling of Worhach et al. is to optimize the parameters of a system for limited environmental impact, not to sell a subset of electronics assembly equipment to a customer. Thus, one would not look to Puri to modify Worhach et al. since there is no suggestion to offer anything for sale in Worhach et al. "Teachings of references can be combined only if there is some suggestion or incentive to do so." In re Fine, 5 USPQ2d 1596,1600 (Fed. Cir. 1988) (quoting ACS Hosp. Sys. v. Montefiore

Hosp., 221 USPQ 929, 933 (Fed. Cir. 1984)) (emphasis in original). Furthermore, even if Worhach et al. and Puri were combined in the manner suggested by the Examiner, the combination would not result in the invention of claim 10. In particular, the Examiner notes that "Puri generates an offer to sell a particular software configuration". Thus, if this teaching of Puri was used to modify Worhach et al., the software of Worhach et al. would be offered for sale, not electronics assembly equipment as required by the claim.

Conclusion

For the reasons set forth above, it is clear that the Appellant's claims 1 and 18, and the claims that depend there-from are not obvious over Worhach et al., in view of Elliott and claims 10-12 and 14-17 are not obvious over Worhach et al., in view of Elliott and further in view of Puri. Accordingly, it is respectfully submitted that the present invention should be properly patentable over these references. It is respectfully requested that this appeal be granted and that the Examiner be reversed.

Respectfully submitted,



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CUSTOMER NO. 28524

APPENDIX — Claims on Appeal

1. (Previously Presented) A method for providing consulting services to a customer in connection with the customer's electronics assembly system, comprising the steps of:

a. identifying a set of solutions opportunities for the customer's electronics assembly system;

b. modeling, on a computer, the customer's electronics assembly system in real time with the customer present;

c. defining one or more performance metrics for a proposed solution;

d. prioritizing the identified solutions by running the model for each of the identified solutions;

e. selecting a proposed solution from among the prioritized, identified solutions;

f. quantifying the benefit of the proposed solution relative to the one or more performance metrics; and

g. communicating the quantified benefit to the customer,

wherein the quantified benefit comprises a cost of ownership measure, and

wherein the customer's electronics assembly system is modeled within approximately one half hour.

2. (Original) The method according to claim 1, wherein the model represents the electronics assembly system at a material flow level of abstraction.

3. (Original) The method according to claim 1, wherein the model comprises a simulation.

4. (Canceled)

5. (Original) The method according to claim 1, wherein the proposed solution comprises information relating to a machine in the electronics assembly system.

6. (Original) The method according to claim 1, wherein the proposed solution comprises information relating to a software tool in the electronics assembly equipment.

7. (Original) The method according to claim 5, wherein the proposed solution comprises information relating to an operating parameter of a machine in the electronics assembly system.

8. (Canceled)

9. (Original) The method according to claim 1, further comprising the steps of:

h. modifying the configuration of a modeled electronics assembly system proposed solution to reflect information provided by the customer;

i. quantifying the benefit of the modified proposed solution relative to the one or more performance metrics; and

j. communicating the quantified benefit of the modified proposed solution to the customer.

10. (Previously Presented) A method for developing an electronics assembly equipment sales offer to a customer during a particular sales session, the method comprising the steps of:

a. identifying a set of customer requirements and constraints;

b. selecting an electronics assembly configuration, comprising electronics assembly equipment or its operating parameters or both, for accomplishing the customer requirements;

c. establishing a model of an assembly system comprising the selected configuration;

d. running the model on a computer to generate at least one performance measure;

e. comparing the at least one performance measure against the customer constraints; and

f. if the at least one performance measure satisfies the customer constraints, offering to sell at least a subset of the electronics assembly equipment of the configuration to the customer,

wherein the offer is developed, with the benefit of the model, during the sales session, and

wherein the customer's electronics assembly system comprising the selected configuration is modeled within approximately one half hour.

11. (Original) The method according to claim 10, wherein the model represents the electronics assembly system at a material flow level of abstraction.

12. (Original) The method according to claim 10, wherein the model comprises a simulation.

13. (Canceled)

14. (Original) The method according to claim 10, wherein the proposed configuration comprises information relating to a machine in the electronics assembly system.

15. (Original) The method according to claim 10, wherein the proposed solution comprises information relating to a software tool in the electronics assembly equipment.

16. (Original) The method according to claim 14, wherein the proposed configuration comprises information relating to an operating parameter of a machine in the electronics assembly system.

17. (Original) The method according to claim 10, wherein the performance measure relates to a cost of ownership measure.

18. (Previously Presented) A method for optimizing the performance of an electronics assembly system during a customer session, comprising the steps of:

a. establishing, during the session, a model of an assembly system having a plurality of possible configurations;

b. selecting a measure of performance for the assembly system;

c. selecting for evaluation a subset of the plurality of configurations;

d. selecting a criterion for the comparison of the subset of the plurality of configurations and selection of a preferred configuration;

e. running the model on a computer to predict the measure of performance for the system, for each of the subset of the plurality of configurations;

g. applying the criterion to the results obtained in step e to select a preferred configuration of the assembly system, and

g. quantifying a benefit of the preferred configuration, wherein the quantified benefit comprises a cost of ownership measure,

wherein the customer's electronics assembly system is modeled within approximately one half hour.

19. (Original) The method according to claim 18, wherein the model represents the electronics assembly system at a material flow level of abstraction.

20. (Original) The method according to claim 18, wherein the model comprises a simulation.

21. (Canceled)

22. (Previously Presented) The method according to claim 18, wherein the preferred configuration includes information relating to a machine in the electronics assembly system.

23. (Previously Presented) The method according to claim 18, wherein the preferred configuration includes information relating to a software tool in the electronics assembly equipment.

24. (Previously Presented) The method according to claim 22, wherein the preferred configuration includes information relating to an operating parameter of a machine in the electronics assembly system.

25. (Canceled)